

State Trunk Highway Program



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State Trunk Highway Program

The Department of Transportation's (DOT) state trunk highway program is responsible for the construction, improvement, and maintenance of the state's 11,753 mile trunk highway system. This paper provides an overview of the structure and scope of the program, describes how it is administered within DOT, details the three main program components, and describes how the program is financed.

Table 1 depicts the distribution of roads by current jurisdictional responsibility. Although state highways comprise only 10.4% of total road mileage, they carry 60% of the total traffic volume. Of the 11,753 miles of state highway in the system, about 83% are rural, 12% are urban, and 5% are considered connecting highways. Connecting highways are roads within the corporate limits of municipalities that are marked as state highway routes, but that are maintained by those municipalities.

Overview

The responsibility for roads and highways is divided between local governments and the state. The state generally has jurisdiction over arterial roads, which function as corridors for interstate and inter-regional travel. This network is called the state trunk highway system. Generally, counties are responsible for collector roads, which serve short distance, intra-regional traffic or provide connections between arterial roads and local roads. Municipalities are responsible for local roads, such as residential streets and town roads, which provide property access and short distance, local mobility services. Jurisdiction does not always follow this functional classification. For instance, a county road can begin to function as an arterial highway if traffic patterns change. However, current DOT policy is to align jurisdictional responsibilities with functional classifications whenever possible.

Table 1: Road Miles by Jurisdiction

Jurisdiction	Miles	% of Total
State Highways	11,753	10.4%
County Highways	19,668	17.5
Town Roads	62,120	55.1
Municipal Streets	17,224	15.3
Other Roads*	<u>1,901</u>	<u>1.7</u>
Total	112,666	100.0%

*Includes park and forest roads and county roads not on the county trunk highway system.

Structure of the Program and Its Organization Within the Department

Prior to the 2001 legislative session, the state highway program had three main components: (1) state highway rehabilitation; (2) major highway development; and (3) highway maintenance and

traffic operations. The 2001-03 biennial budget act (2001 Act 16) added a fourth component for the rehabilitation or expansion of freeways in southeast Wisconsin, which had previously been the responsibility of the state highway rehabilitation component or, in the case of highway expansion, the major highway development component.

The state trunk highway program is administered by three DOT divisions: (1) the Division of Transportation Infrastructure Development; (2) the Division of Transportation Districts; and (3) the Division of Transportation Investment Management. The Divisions of Transportation Investment Management and Transportation Infrastructure Development are in the central office in Madison, while the Division of Transportation Districts is composed of eight regional offices. The following list shows the counties located in each district.

District Office	Counties
Eau Claire	Chippewa, Clark, Dunn, Eau Claire, Pepin, Pierce, St. Croix, and Taylor
Green Bay	Brown, Calumet, Door, Kewaunee, Manitowoc, Marinette, Menominee, Oconto, Outagamie, Shawano, Sheboygan, and Winnebago
La Crosse	Buffalo, Crawford, Jackson, La Crosse, Monroe, Richland, Trempealeau, and Vernon
Madison	Columbia, Dane, Dodge, Grant, Green, Iowa, Jefferson, Lafayette, Rock, and Sauk
Rhineland	Florence, Forest, Iron, Langlade, Lincoln, Oneida, Price, and Vilas
Superior	Ashland, Barron, Bayfield, Burnett, Douglas, Polk, Rusk, Sawyer, and Washburn
Waukesha	Fond du Lac, Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha
Wis. Rapids	Adams, Green Lake, Juneau, Marathon, Marquette, Portage, Waupaca, Waushara, and Wood

Planning, Programming, Design, and Construction in the Highway Improvement Program

The highway rehabilitation, major highway development, and southeast Wisconsin freeway rehabilitation components of the highway program are sometimes collectively referred to as the "highway improvement program." This program can be divided into four stages of development: planning, programming, design, and construction. This section describes these stages.

Planning

Planning involves both the identification of long-term transportation needs and goals and the monitoring of conditions, such as pavement condition, traffic patterns, and safety. Generally, the planning function is shared between the Division of Transportation Investment Management and the district offices.

In order to be eligible for federal transportation aid, the state must have a highway plan that outlines the broad policy goals for the following 20 years. In developing a transportation plan, DOT must consider a range of planning factors, which are listed in the federal transportation law. For instance, the plan must aim to promote economic vitality, safety, system preservation, and the accessibility and mobility of people and freight. It must also seek to protect the environment and promote energy efficiency and the connectivity between different transportation modes. In addition to the requirements that are included in federal transportation law, the federal Clean Air Act requires the Department's transportation plan to be coordinated with the state's implementation plan, developed by the Department of Natural Resources, which designates how the state intends to control emissions of pollutants in ozone nonattainment areas.

In addition, as a condition of using federal transportation aid, DOT must consult with the state's metropolitan planning organizations (MPOs) in developing the statewide plan. Federal transportation law requires each metropolitan area with a population greater than 50,000 to have a designated MPO representing local governments. Each MPO develops a metropolitan transportation plan in consultation with local governments in the region.

DOT's current state highway plan covers the period between 2000 and 2020. Similar to earlier plans, *Wisconsin State Highway Plan 2020* divides the state trunk highway system into subsystems: (a) Corridors 2020; (b) other principal arterials; (c) minor arterials; and (d) collectors and local function roads. The Corridors 2020 component is a network consisting of 3,650 miles of principal highways, including the state's interstate system, most rural multilane routes, and some important two-lane highways. The network is further divided into the backbone system and the connector system.

The primary segments of the Corridors 2020 backbone system include: (a) STH 29 from I-94 west of Chippewa Falls to Green Bay; (b) USH 53 from Superior to Eau Claire; (c) USH 151 between Fond du Lac and the southwestern border of the state; (d) USH 41 from the Milwaukee area to Marinette in northeastern Wisconsin; (e) USH 10 between the Fox Cities and Stevens Point; and (f) the entire Interstate system. Most of the backbone system consists of multi-lane freeways or expressways. Some segments remain two-lane highways, but the Department intends to eventually upgrade the entire backbone system to four lanes.

The highway plan establishes traffic movement and road condition performance thresholds for each subsystem and, using computer models for traffic growth and pavement deterioration, predicts how much it would cost to rehabilitate and

improve highways to keep most segments of highway above those thresholds by the year 2020.

Using this methodology, the plan estimates that the amount of highway expansion and rehabilitation spending needed over the 21-year period between 2000 and 2020 would be slightly more than \$20 billion in 1999 dollars, or an average of more than \$950 million per year. By comparison, the amount budgeted in 1999 (the year prior to the plan's completion) for highway improvements (excluding highway administration and highway maintenance and traffic operations) was \$743 million. In 2002-03, a total of \$955 million (2003 dollars) was provided for highway improvement programs. It should be noted, however, that of this amount, \$62.4 million was one-time federal funds for the Marquette Interchange reconstruction project.

Much of the additional highway costs identified by the plan are accounted for by reconstruction and, in some cases, expansion of the major freeways and interchanges in the Milwaukee area. The plan estimates that nearly \$5 billion would need to be spent on these improvements over the 21-year period. The first of these anticipated projects would be the complete reconstruction of the Marquette Interchange in Milwaukee.

Programming

The programming stage involves selecting and scheduling improvement projects based on available funding and policy priorities. In developing this schedule, decisions must be made on which projects should be given highest priority, relying, in part, on the adopted highway plan, which outlines the broad policy goals of the highway program.

The Department personnel responsible for programming vary depending upon the type of construction project. Major highway development projects, large or costly bridge projects, and rehabilita-

tion of multi-lane highways are programmed by the central office, within the Division of Transportation Investment Management. All other rehabilitation projects are programmed by the transportation district offices. The portion of the rehabilitation budget that is reserved for the more routine highway and bridge projects is allocated to the districts based on an estimate of the total rehabilitation needs within each district. District offices develop project schedules based on the amount allocated to the district. Although there is some central oversight of this process, the districts are given considerable discretion in choosing which projects to put into the schedule.

Since the number of major highway development projects and larger highway and bridge rehabilitation projects may vary considerably from year to year within a given district, these projects are scheduled by the central office. This way, districts are not forced to exhaust their allocations on large projects, thereby neglecting more routine rehabilitation.

The Division of Transportation Investment Management, in consultation with the district offices, compiles program schedules for the following six years for the major highway development and rehabilitation programs into a comprehensive, six-year program. The six-year program, which is updated periodically based on changes in funding and in the plans for individual projects, provides a listing of all anticipated projects that indicates the type of project, the location, estimated cost, and scheduled construction date. The first two years of the six-year program are based on funding levels provided by the most recent biennial budget. The other years are also based on this funding level, although the schedule for projects in the later years is more likely to change, since funding levels may be changed in subsequent biennial budgets.

Design

The design process typically begins far in advance of actual construction. For major highway projects, the design stage may take eight to ten years, beginning with concept development. Simple resurfacing projects may take one to two years. In part, the length of the design process is dictated by the amount of data that must be collected to complete required environmental reviews and to create the detailed plans for construction. Furthermore, because highway construction affects private landowners, as well as the driving public, the Department uses an extensive public involvement process to receive and respond to multiple concerns regarding proposed projects. In addition, the highway engineers must have detailed information on the quality and type of soil and the physical characteristics of the landscape in order to put together the design proposal, which is eventually used to put the project up for bidding.

In addition to the design work that is directly related to the construction of the highway, there are numerous other preconstruction activities that lengthen the process. For instance, the Department frequently must purchase land for the construction of a new highway or the expansion of an existing highway. This requires negotiation with affected landowners.

For most highway projects the design stage includes environmental studies and mitigation. For larger projects, federal and state laws require the Department to do (or to contract for) an environmental impact statement. Because projects can harm or destroy wetlands or other sensitive wildlife habitat, these consequences must be reported in advance of the project. In response to these expected impacts, the Department must plan to restore or create wetlands to replace those destroyed by the highway project. Environmental impact statements also forecast the effects on residential and commercial development and identify impacts

on historically or archaeologically significant sites. When possible, the Department must also respond to these impacts. Typically, the impact statements and the mitigation plans must be approved by the federal government, which increases the amount of time required to complete the design phase.

Funding for the design process is provided within the appropriations for the corresponding programs. During recent biennia, the design budget has been established at about 15% of the net construction program size (total construction budget less funds provided for construction engineering). The design function is carried out by a combination of DOT staff (both in the Division of Transportation Investment Management and the district offices) and private firms.

Construction

The construction stage involves the preparation of projects for bidding and the oversight of the construction work done by contractors. The preparation of bids is done by the central office within the Division of Transportation Infrastructure Development, while the management of project construction is done by transportation district offices.

Projects are put up for bidding every month, generally on the third Tuesday. Although project bidding is spread throughout the year, the busiest months are in the winter and early spring, which allows the largest projects to begin early in the construction season.

The preparation of a project for bidding starts when a design is completed by district personnel or an engineering consultant. The Division of Transportation Infrastructure Development reviews the completed project design to ensure that all of its elements are consistent with state standards and then, from the design, develops a project proposal. The proposal contains estimates of the amount and type of work needed to complete the project. For instance, the proposal

may provide an estimate of the amount of excavation or crushed rock needed, typically expressed in cubic meters or cubic yards.

Once the proposals have been completed, the project is advertised, which occurs about five weeks in advance of the bidding date. Contractors interested in making a bid on a project request a copy of the proposal from the Department. The bids are submitted on a cost-per-unit basis. That is, contractors estimate how much it would cost them to deliver one unit of every item in the proposal. Once the bids are received, the unit prices are multiplied by the estimated quantities and then totaled to arrive at the final bid price. If there are no irregularities in the submitted bids, the firm with the lowest bid receives the contract.

Once construction begins, a project manager from the district office monitors the work done by the contractor. This typically involves the monitoring of construction materials and techniques for quality and may involve making minor modifications to the design of the project to account for unanticipated contingencies. For some projects, the extent of DOT monitoring may be limited because the contracts contain warranty provisions that require the contractor to repair any defects that appear within a specified number of years after the completion of the construction.

Major Highway Development

The major highway development program provides for the development and construction of new or significantly altered highway projects. Major highway projects are defined as projects that have an estimated cost exceeding \$5,000,000 in current dollars and consist of at least one of the following: (a) construction of a new highway of 2.5 miles or more in length; (b) relocation of 2.5 miles or more of existing roadway; (c) the addition of one or more

lanes at least five miles in length; or (d) the improvement of 10 miles or more of an existing divided highway to freeway standards. Projects providing an approach to a bridge over a river that forms a boundary of the state are excluded from this definition. Also excluded, as of the passage of 2001 Act 16, are any highway expansion projects on the freeways of southeast Wisconsin. These projects are now to be completed under the southeast Wisconsin freeway rehabilitation program.

Major Highway Project Selection Process

All major highway projects must be enumerated in the statutes prior to beginning construction. The Transportation Projects Commission (TPC) reviews proposals for major projects and makes recommendations to the Governor and Legislature as to which ones should be enumerated. The TPC includes the Governor, who acts as the chairperson, five senators, five representatives, three public members appointed by the Governor, and the Secretary of Transportation (a nonvoting member). The typical process through which the TPC selects projects for enumeration involves several steps:

1. DOT selects projects for preliminary engineering and environmental study based on its analysis of congestion, safety, and public interest as expressed at public hearings conducted by the TPC and through written correspondence.

2. DOT determines if projects should be a candidate for enumeration based on the results of the preliminary engineering and environmental study, public acceptance, and cost effectiveness.

3. Projects for which DOT has completed environmental review and which DOT determines merit construction are presented to the TPC in the spring of even-numbered years. The TPC holds public hearings throughout the state on the candidate projects.

4. DOT reports its recommendation for projects to be enumerated in the next biennial budget to the TPC by September 15 of each even-numbered year. DOT assigns a score to each project using a system outlined in an administrative rule. The system assigns each project a score between zero and 100 for each of five criteria. Each of these scores is multiplied by a weighting factor to determine a final score. The criteria and their weights are, as follows: (a) enhances Wisconsin's economy (40%); (b) improves highway safety (20%); (c) improves traffic flow (20%); (d) minimizes undesirable environmental impacts (10%); and (e) serves community objectives (10%). According to the administrative rule, a project must be worse than the average highway of the same type in terms of either traffic congestion or highway safety to be recommended to the TPC.

5. By December 15 of each even-numbered year, the TPC submits its recommended list of projects to be enumerated to the Governor and Legislature. The TPC may or may not include the projects recommended by DOT and may add additional projects. The TPC may designate an otherwise nonqualifying project if it receives a petition for such designation from a city or village for a project that is within its corporate limits and is estimated to cost \$2,000,000 or more, provided that the project is not a freeway.

The TPC is prohibited from recommending a project for enumeration unless the project, along with all other enumerated projects, can be started within six years following the project's enumeration, assuming a constant, real-dollar program size throughout the period. The Commission, however, may recommend a project that could not otherwise be started within the six-year time period if it also recommends a funding proposal for the major highway development program that would allow the project to be started in six years. In December, 2000, the TPC recommended the enumeration of three projects, at a total estimated cost of between \$292.0 million and

\$319.0 million: (a) the relocation of STH 17 in Rhinelander; (b) the expansion of STH 26 from Janesville to Watertown; and (c) the expansion of I-39/USH 51 in Wausau. These three projects were enumerated in the statutes by Act 16.

At the meeting of the TPC in December, 2002, the Department recommended to the Commission that no additional projects be approved, after determining that they could not be started within six years under the current budget for the program. The TPC followed this recommendation and did not, therefore, recommend any projects for enumeration in the 2003-05 biennial budget.

Out of a concern that it may be difficult for the TPC to refuse to recommend a project for enumeration after the Department has already done extensive studies on the project, the 1999-01 biennial budget created a provision requiring DOT to get the approval of the TPC prior to the preparation of any environmental impact statement or environmental assessment for a potential project. This approval process follows three steps:

1. DOT provides the TPC with a list of projects that are candidates for environmental study, by October 15 of each odd-numbered year.
2. DOT recommends which of these projects should be approved for an environmental study, by March 15 of the following even-numbered year.
3. The TPC notifies the Department of which projects are approved for an environmental study, by April 15 of the even-numbered year.

Enumeration gives DOT the authority to build a project, but does not establish a statutory priority or timetable or require a specific design. It also does not require DOT to actually construct the project. Consequently, DOT has the authority to begin an enumerated project either before or after the date indicated in TPC or legislative discussions.

With a few exceptions, however, the Department has typically undertaken projects in the same order that they were enumerated.

Table 2 shows the current schedule of enumerated highway projects that have not yet been completed and the estimated amount of funding needed to complete them, as of December, 2002. Several projects are largely complete except for minor improvements, such as frontage road construction, roadway fencing, and landscaping. These projects are not included in the table individually, but the sum of the costs is included at the bottom of the table under the heading "Minor Work to Complete Other Projects."

State Highway Rehabilitation Program

DOT allocates funding in the state highway rehabilitation program between three subprograms: (1) existing highway improvement; (2) backbone rehabilitation; and (3) state bridges. The purpose of each of these subprograms is to preserve and to make limited improvements on the state highway system.

Existing Highway Improvement and Backbone Rehabilitation

The existing highways and backbone rehabilitation components of the rehabilitation program are responsible for highway surface improvement projects. The existing highway component is responsible for projects on state highways that are not Corridors 2020 backbone routes. These projects are programmed by districts using funds set aside for district allocation. Backbone highways, including interstate highways, are typically more expensive to rehabilitate, so these projects are programmed by the central office, in consultation with the district offices. However, rehabilitation of southeast Wisconsin

Table 2: Enumerated Major Highway Projects Remaining to be Constructed (\$ in Millions)

	State Trunk Highway	County	Final Contract Year (a)	Estimated Cost(b) (2003 Dollars)
<u>Projects Enumerated in 1989</u>				
Appleton to Marshfield	10			
USH 45 to STH 110		Outagamie & Waupaca	2003	\$28.6
Waupaca to USH 51		Waupaca & Portage	2006	43.7
Marshfield to USH 51		Portage & Wood	2012	165.1
Waupun to Fond du Lac	151	Fond du Lac	2007	70.3
<u>Projects Enumerated in 1991</u>				
Whitewater Bypass	12	Jefferson & Walworth	2005	22.1
Chippewa Falls to IH 94	29	Chippewa & Dunn	2006	37.4
STH 54 to Dyckesville	57	Brown & Kewaunee	2003	11.9
USH 41 to STH 116	110	Winnebago	2003	19.1
<u>Projects Enumerated in 1993</u>				
Beloit Bypass	81/213	Rock	2006	5.2
Sauk City to Middleton	12	Dane	2004	65.9
Marshfield Boulevard	13	Wood & Marathon	2003	8.6
Houlton to New Richmond	64	St. Croix	2006	84.5
Fond du Lac Bypass	151	Fond du Lac	2006	36.7
<u>Projects Enumerated in 1995</u>				
Belmont to Dodgeville	151	Iowa & Lafayette	2003	13.5
Oconomowoc Bypass	16/67	Jefferson & Waukesha	2006	46.7
Eau Claire Freeway	53	Eau Claire & Chippewa	2007	100.1
<u>Projects Enumerated in 1997</u>				
Burlington Bypass	11	Walworth & Racine	2011	106.6
I-90/94 to Ski Hi Road	12	Sauk	2008/2015(c)	70.0
La Crosse Corridor	53	La Crosse	2012	85.6
Dyckesville to STH 42	57	Kewaunee & Door	2008	84.0
STH 22 to STH 64	141	Oconto & Marinette	2006	69.9
Dickeyville to Belmont	151	Grant & Lafayette	2005	75.1
<u>Projects Enumerated in 1999</u>				
Oconto to Peshtigo	41	Oconto & Marinette	2009	132.3
STH 67 to USH 41	23	Sheboygan & Fond du Lac	2011	45.6
<u>Projects Enumerated in 2001</u>				
Rhineland Relocation	17	Oneida	2003	12.0
Janesville to Watertown	26	Rock, Jefferson & Dodge	2015	205.8
Wausau Beltline	39/51	Marathon	2009	193.1
Minor Work to Complete Other Projects				1.4
TOTAL				\$1,840.8

(a) "Final contract year" reflects the year that the Department expects to let the final major construction contract for the project. In some cases, the project may not be completed until the following year. With some projects, contracts for auxiliary improvements, such as frontage road work, roadway fencing, or landscaping may be scheduled in later years.

(b) For projects already underway, cost reflects remaining costs as of December, 2002.

(c) The final contract years for this project reflect the completion of different phases of the project.

freeways, as of the 2001 legislative session, are the responsibility of the southeast Wisconsin freeway rehabilitation program instead of the state highway rehabilitation program.

Highway rehabilitation projects can generally

be divided into three main types: resurfacing, reconditioning (further classified as major or minor), and reconstruction. These types of rehabilitation are described below.

Resurfacing means placing a new surface on existing pavement to provide a better, all-weather surface and a better riding surface, and to extend or renew the life of the pavement. It generally does not involve improvement in traffic capacity or geometrics (roadway characteristics such as road width and the number and severity of roadway curves and hills). Resurfacing may include some elimination or shielding of roadside obstacles, culvert replacements, installation of signals, marking signs, and intersection improvements. Usually, the acquisition of additional right-of-way is not required, except possibly minor acquisition for drainage and intersection improvements.

Reconditioning refers to work in addition to resurfacing. Minor reconditioning includes pavement widening and shoulder paving. Major reconditioning includes the improvement of an isolated grade, curve, intersection, or sight distance problem to improve safety. Major reconditioning projects may require the acquisition of additional land for right-of-way.

Reconstruction means the total rebuilding of an existing highway to improve maintainability, safety, geometrics, and traffic service. Major elements may include flattening of hills and grades, improvement of curves, widening of the roadbed, and elimination or shielding of roadside obstacles. Normally, reconstruction would require additional acquisition of right-of-way.

DOT also uses a special classification of reconstruction called pavement replacement. This type of project, like all reconstruction projects, involves the complete rebuilding of the roadway pavement and base. However, pavement replacement generally does not involve changes in the road alignment and does not require additional right-of-way. This type of project is done where an existing pavement and base have deteriorated to the point of needing replacement, but where the road was originally built to high standards, and thus does not need geometric improvements. This

is commonly the case on rural interstate highways.

The selection of specific projects is based on an evaluation of surface pavement condition, the number and severity of hills and curves, accident numbers and rates, and traffic congestion. This process, which is also used in preparation of the six-year highway program, allows DOT to identify existing conditions and improvement needs.

In addition to these main highway rehabilitation types, the existing highway and backbone rehabilitation components of the rehabilitation program fund a number of other activities, including: (a) pavement maintenance work that is less extensive than full resurfacing, but more extensive than the pavement repair normally done in the maintenance component of the highway program; (b) additions or deletions to the state trunk highway system through jurisdictional transfer agreements with local governments; (c) improvements to permanent weigh scale facilities; (d) construction projects at rest areas; (e) hazard elimination safety projects; (f) noise barriers; and (g) wetland mitigation projects.

State Bridge Improvement Program

The state bridge improvement program provides funding for the replacement or rehabilitation of deficient bridges on the state trunk highway system. Bridge deficiencies may include: (a) structurally deficient bridges; (b) functionally obsolete bridges, characterized by narrow roadways, restricted clearances, or poor alignment; and (c) bridges that have load capacity restrictions. To monitor bridge conditions and to assist in assessing deficiencies, DOT maintains a computer-based bridge appraisal system. This system is developed from bridge field inspections and central office appraisal of the inspection results.

Most bridge projects are programmed by district offices using district allocation funds. DOT allocates funds to the districts for both the bridge

and existing highway rehabilitation components of the rehabilitation program, but these sources are combined, so districts can program any mix of bridge and highway projects, as needed.

High-cost bridge rehabilitation projects, however, are programmed by the central office in order to avoid reducing the efforts by the district offices to improve lower-cost, deteriorating bridges. High-cost bridges are bridges with a deck area greater than 40,000 square feet. Table 3 lists the high-cost bridge rehabilitation projects that DOT anticipates constructing between 2003 and 2009. In some cases, local governments may be required to pay for a portion of the cost of constructing these bridges, but the table shows only the portion of the cost paid with state or federal funds.

Southeast Wisconsin Freeway Rehabilitation

The 2001-03 biennial budget, 2001 Act 16, created a separate program for the rehabilitation and expansion of southeast Wisconsin freeways. Under this program, southeast Wisconsin freeways are considered to be any state trunk highways within Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, or Waukesha counties that have four or more lanes of traffic physically separated by a median barrier and that give preference to through traffic by limiting traffic access to interchanges only. Wisconsin 2001 Act 109 modified the program by prohibiting the Department of Transportation from performing any rehabilitation, which includes, for the purposes of this provision, the addition of any lanes to

Table 3: High-Cost Bridges Scheduled Between 2003 and 2009 (\$ in Millions)

County	Highway	Bridge	Final Contract Year(a)	Estimated Cost(b) (2002 Dollars)
Eau Claire	USH 12	Clairemont Avenue, Eau Claire	2004	\$4.7
Milwaukee	USH 18	State Street, Milwaukee	2004	2.9
Brown	STH 54	Mason Street, Green Bay	2004	6.2
Winnebago	Local	Oak Street, Neenah	2005	3.5
La Crosse	USH 14	Cass Street, La Crosse	2005	41.0
Waukesha	STH 164	UP Railroad Tracks	2005	8.2
Door	Local	Michigan Street, Sturgeon Bay	2006	22.5
Marathon	Local	Thomas Street, Wausau	2006	2.6
Pepin	USH 10	Chippewa River, Durand	2006	9.2
Brown	STH 32	Main Street, De Pere	2006	12.5
Crawford	USH 18	Mississippi River, East Channel	2007	1.7
Crawford	USH 18	Mississippi River, West Channel	2007	2.6
Winnebago	STH 44	Wisconsin Avenue, Oshkosh	2007	20.1
Outagamie	Local	College Avenue, Appleton	2008	7.3
Milwaukee	STH 32	Kinnickinnic Ave, CP Railroad Tracks	2008	4.2
Marathon	STH 153	Main Street, Mosinee	2008	3.8
Iowa & Sauk	USH 14	Wisconsin River, Spring Green	2009	8.5
Adams & Juneau	STH 82	Wisconsin River, Point Bluff	2009	4.3

(a) "Final contract year" reflects the year that the Department expects to let the final major construction contract for the project. In some cases, the project may not be completed until the following year.

(b) For projects already underway, cost reflects remaining costs as of November, 2002.

existing southeast Wisconsin freeways, using the appropriations for state highway rehabilitation or major highway development.

In addition to creating the program, Act 16 provided a total of \$160.6 million in state and federal funds for preliminary work related to the reconstruction of the Marquette Interchange. The Department's tentative schedule for the construction phase of the project has work beginning in 2003, with completion planned for 2007. However, additional funding must be provided in the 2003-05 biennium for the project to be started on this schedule. The Department estimates that the total cost of the project, including the cost of the preliminary work taking place during the 2001-03 biennium, will be about \$950 million.

The Department has indicated that, following the completion of the Marquette Interchange project, other southeast Wisconsin freeways will need to be reconstructed. As noted earlier, the Department's 1999 long-range highway plan proposed the reconstruction of much of the freeway system over the 21-year period between 2000 and 2020. The cost of these projects, including the cost to add lanes to 57 miles of freeway, was estimated at \$5.4 billion.

Since that time, a more detailed study of the freeway system has been conducted by the Southeastern Wisconsin Regional Planning Commission (SEWRPC). The study's preliminary recommended alternative calls for the reconstruction of the system, including the addition of lanes on 127 miles of freeway, over a 30-year period (2001 to 2030). The total estimated cost of these projects is \$6.25 billion, or an average of slightly over \$200 million per year.

Any future construction project on southeast Wisconsin freeways that adds lanes to a freeway five or more miles in length would be constructed under the southeast Wisconsin freeway

rehabilitation program, instead of the major highway development program. Wisconsin 2001 Act 109 included a provision that creates a separate statutory enumeration process for these projects. Unlike other highway capacity expansion projects completed under the major highway development program, southeast Wisconsin freeway expansion projects will not be reviewed and recommended for enumeration by the Transportation Projects Commission.

As noted, Act 16 provided a total of \$160,643,900 in the appropriations for southeast Wisconsin freeway rehabilitation for the reconstruction of the Marquette Interchange. No funding was provided in those appropriations, however, for other scheduled rehabilitation projects on southeast Wisconsin freeways. In order to establish funding for these projects, Act 109 required DOT to submit a request to the Joint Committee on Finance to transfer funds that had been allocated for such projects in 2002-03 from the appropriations for state highway rehabilitation to the appropriations for southeast Wisconsin freeway rehabilitation. At its December, 2002, meeting, the Committee acted on DOT's request, transferring a total of \$43,282,000 (\$19,476,900 SEG and \$23,805,100 FED) from the rehabilitation appropriations to the southeast Wisconsin freeway appropriations.

Maintenance, Repair, and Traffic Operations

The final component of the state highway program is the maintenance, repair, and traffic operations program. This program is responsible for a variety of activities related to the upkeep of state highways and highway rights-of-way. Unlike the other state highway program components, the activities performed under the maintenance and traffic operations program generally do not require extensive planning and design. The maintenance

programs are divided into two program areas: (a) highway maintenance; and (b) highway traffic operations. Each is described below.

Highway Maintenance

The majority of state trunk highway maintenance activities are performed by county workforces under contract with the state. Generally, the counties perform the actual maintenance activities and DOT (primarily through the district offices) oversees their work and sets statewide maintenance policies. This arrangement has existed in its current form since 1932, although counties were involved in some way in the maintenance of state roads prior to that time.

Two areas of general maintenance are performed primarily by private contractors: (a) vegetation management, including plantings, inventory, and the spraying of herbicides along roadsides; and (b) the maintenance of year-round rest areas by disabled citizens participating in sheltered workshops.

Highway maintenance can generally be separated into two types of activities, winter maintenance and general maintenance.

Winter maintenance involves the maintenance and upkeep of state trunk highways during the winter season. The principal activities performed under this program are snowplowing, drift control, and application of de-icers. These activities are performed almost entirely by county workforces under contract with the state. The state, however, purchases de-icing salt directly and provides it to the counties for use on state highways.

General maintenance involves the daily or periodic repair and upkeep of state trunk highways, including the following activities:

- mowing and weed control, brush and tree removal, trash pickup, and recycling;

- maintenance of rest areas, tourist information centers, waysides, scenic overlooks, and historical markers, including parking, picnic, and toilet facility improvements;

- surface, base, and shoulder repair;
- minor bridge repair;
- plantings and landscaping in rest areas and other areas;
- emergency repairs and accident cleanup;
- drainage, culvert landscaping, erosion control measures, and guard fence repairs;
- lift bridge and ferry operation; and
- repair of damaged traffic signs.

Maintenance Costs

Counties are reimbursed for state maintenance work based on three criteria: (a) county labor costs; (b) county machinery costs; and (c) materials supplied by the county. DOT uses a reimbursement formula that is based on all counties' actual machinery costs, averaged over a period of five years, and each county's employee wage rates. Due to variable county labor contracts, some counties receive a higher hourly reimbursement rate than others.

In order to exercise control over the amount of general maintenance work that is done on state highways, the contract that DOT enters into with the counties establishes a maintenance budget for each county. The budget is established based on a consideration of various factors present in each county, such as the type of state highways (for example, concrete versus asphalt or multi-lane freeway versus two-lane highway), number of lane miles of each type, condition, and amount of traffic. Once established, counties are generally expected to stay within that budget. This may mean that a county may be directed to curtail certain maintenance activities late in the year to stay within the established budget if expenditures earlier in the year were higher than expected.

Highway Traffic Operations

Unlike the highway maintenance program, the majority of work in the highway traffic operations program is conducted by DOT staff or private contractors. This program funds the installation of traffic control and safety devices designed to enhance the orderly and efficient flow of vehicles on existing state trunk highways. Highway traffic operation functions include: (a) pavement marking activities, such as centerline and edge line painting, channelization lines, stop lines, curb and crosswalk lines, or the installation of raised centerline reflectors; (b) highway signing activities; (c) traffic signalization activities; and (d) highway lighting activities.

Prior to the passage of the 2001-03 biennial budget (2001 Act 16), many of the capital expenditures under the traffic operations program, such as the installation of traffic signals, signs, and highway lights, were funded from the state and federal appropriations for state highway rehabilitation. A provision included in Act 16, however, required that these expenses be funded from the maintenance and traffic operations appropriations, unless they are included in a larger highway improvement project. The provision also mandated that the installation of any intelligent transportation system, unless included in a highway improvement project, be funded from the maintenance and traffic operations appropriations instead of from the highway rehabilitation appropriations, as had previously been the case. Intelligent transportation systems are designed to improve traffic flow and provide the public with information on traffic conditions in urban areas using such devices as freeway ramp meters, variable message signs, and traffic cameras.

To account for this shift in program responsibilities, Act 16 transferred \$27.0 million from the state appropriation for highway rehabilitation to the state appropriation for highway maintenance and traffic operations in

2001-02. No funds, however, were transferred in 2002-03. Instead, DOT was given the authority to submit a request to the Joint Committee on Finance to transfer \$10.0 million for these activities in that year to the maintenance and traffic operations appropriation from the state highway rehabilitation appropriation. Any costs above this amount would have to be absorbed within the maintenance and traffic operations program. In July, 2002, DOT did submit such a request, although the request was later amended to request a supplemental appropriation from the transportation fund, instead of a transfer, of \$10.0 million. In November, 2002, the Joint Committee on Finance approved the Department's request for a supplemental appropriation.

State Trunk Highway Program Finance

The state trunk highway program is funded through several sources. During the 2001-03 biennium, the highway program, including administration and planning, was financed with 46.3% state funding, 42.2% federal funding, and 11.5% from revenue bond proceeds. In addition, parts of many highway improvement projects are funded partially with funds from local governments. The following section describes each funding source.

State Funding

The segregated state transportation fund is the state funding source for the state trunk highway program. The transportation fund is a separate, nonlapsible trust fund administered by DOT. The primary revenue sources for the transportation fund include a motor fuel tax, motor vehicle and driver's license fees, railroad taxes, and aeronautical taxes and fees.

Table 4 shows total state transportation fund

revenues appropriated for the state highway program for the past ten biennia.

Table 4: State Trunk Highway Programs - State Transportation Fund Appropriations

Biennium	State Segregated Appropriations	Change From Prior Biennium
1983-85	\$406,291,200	
1985-87	404,140,500	-0.5%
1987-89	563,571,500	39.4
1989-91	622,130,700	10.4
1991-93	632,628,200	1.7
1993-95	707,424,600	11.8
1995-97	765,822,000	8.3
1997-99	846,210,500	10.5
1999-01	930,437,100	10.0
2001-03	1,032,255,800	10.9

Revenue Bonding

Revenue bonding authority has been used as an ongoing state funding source for the highway program since the early 1980s. Revenue bonds, as opposed to general obligation bonds, are repaid solely from a dedicated revenue source. In the case of transportation revenue bonds, the dedicated revenue source is the motor vehicle registration fee. To ensure the stability of the bonds for investors, bond repayment receives first priority on those revenues.

Revenue bond proceeds are used to fund the construction of major highway development projects and administrative facilities. Bonding authority is provided based on anticipated needs for the next four fiscal years. This funding strategy, in contrast to the standard biennial approval of state expenditures, is employed to reflect the high cost and long-term nature of the projects, which span multiple biennia. Although the approval of unused revenue bond authority could be rescinded by a future legislative action, the early legislative approval of this form of expenditure authority for

long-term construction projects is provided as a means of assuring the completion of a project once it is begun.

Federal Funding

Federal funds are distributed based on multi-year federal surface transportation authorization acts. In 1998, Congress passed a new transportation aid authorization act, titled "The Transportation Equity Act for the 21st Century," or TEA-21. One of the most significant changes made by TEA-21 from prior authorizing legislation is a provision requiring amounts appropriated by Congress each year in the highway program to be tied to revenue received in the federal highway trust fund. This has resulted in a significant increase in federal highway spending nationwide and large increases in the federal highway aid received by the state. Table 5 shows the amount of federal formula-based highway aid (this excludes discretionary grants and Congressional earmarks for specific projects) received in each year since 1991.

Table 5: Federal Formula-Based Highway Aid History (\$ in Millions)

Year	Amount
1991	\$239
1992	324
1993	305
1994	341
1995	346
1996	331
1997	375
1998	410
1999	465
2000	498
2001	531
2002	549

Federal highway funds are spent both in the state highway program and in other DOT programs, such as: (a) the local transportation

facility improvement assistance program, which funds rehabilitation projects on streets and roads under local jurisdiction; (b) the congestion mitigation and air quality improvement program, which provides funds for projects designed to reduce traffic congestion and pollution caused by vehicles; (c) the transportation enhancements program, which provides grants for bicycle and pedestrian facilities and the rehabilitation of historic transportation facilities; and (d) the railroad crossing improvement program, which mainly funds the installation of crossing warning signals and gates.

In the state highway program, federal appropriations are estimates of funding to be received and do not control the amount that may be spent. DOT can spend all funds received from federal sources, not just the amounts specifically estimated by the Legislature in budgetary schedules.

DOT is required, however, to submit a plan for making adjustments to its appropriations to the Joint Committee on Finance for the Committee's approval if the amount of federal aid received in a given year differs by more than 5% from the amount estimated. In 2002, the amount of federal aid fell within the 5% threshold, and so no plan was required. As of the publication of this paper, Congress had not passed a 2003 appropriation act for transportation, and so the state's federal aid for that year remained unknown. Based on some versions of the appropriation bills that have been considered in Congress, however, the state's aid could be more than 5% less than the amount estimated in the 2001-03 biennial budget.

In response to concerns that the state's 2003 federal highway aid would be below estimated amounts, the Legislature included a provision in 2001 Act 109 that authorizes \$140.0 million in transportation-fund supported, general obligation bonding to compensate for a reduction (relative to estimated amounts) in federal highway aid. The

provision requires DOT, in order to use the bonding, to first request approval from the Joint Committee on Finance. The amount of bonding used may not exceed the amount by which the actual federal highway aid received falls below the estimates contained in the budget.

At a November, 2002, meeting, the Joint Committee on Finance approved a motion that authorizes the Department to use the bond proceeds as needed to replace any reduction of federal funds in 2003, although the Department did not submit a request for the use of the bonds.

Local Funding

Local funds for the improvement of state trunk highways are provided principally to fund portions of a project that are a local priority. Local funds can include both monies from local governments and private businesses. In conjunction with DOT's improvement projects, local communities fund certain project components that are not eligible for state or federal funding. These local initiatives may include sidewalks, curbs, gutters, special access traffic lanes for local traffic, lighting, and other traffic control features.

Local cost sharing is required by DOT for: (a) the cost of items not directly associated with the transportation services provided by the highway project, such as parking lanes; (b) costs incurred at state and local road interchanges and intersections, with local units paying for the costs on the local road and sharing in the costs of the interchange bridges; (c) 25% of the cost of preliminary engineering for all improvements on connecting highways; and (d) a portion of the costs for improvements on state trunk highways, or connecting highways, that provide a substantial, direct benefit to a community or its members.

Funding Level

Table 6 shows the funding, by source, for the

four components of the state highway program, plus for administration and planning. Since local funding is not used for programming purposes and the actual amounts used are not reflected in budget appropriations, this funding source is not included

in the table.

Table 7 shows total funding (excluding local funding) for the four components of the highway program for the past six biennia.

Table 6: State Trunk Highway Programs -- 2001-03 Biennium Appropriations (\$ in Millions)

Appropriations	Revenue Bonding	Current Revenue Funding Sources		
		State	Federal	All Sources
Major Highway Development	\$257.2	\$100.5	\$115.9	\$473.6
State Highway Rehabilitation		483.8	658.2	1,142.0
Southeast Wisconsin Freeway Rehabilitation		47.2	156.7	203.9
Highway Maintenance, Repair, and Traffic Operations		360.9	2.4	363.3
Administration and Planning		<u>39.9</u>	<u>9.1</u>	<u>49.0</u>
TOTAL	\$257.2	\$1,032.3	\$942.3	\$2,231.8

Table 7: State Trunk Highway Program Funding History -- All Funds (\$ in Millions)

	Major Highway Development	State Highway Rehabilitation	Southeast Wisc. Freeway Rehabilitation*	Highway Maintenance/Traffic Operations	Administration and Planning	Total
1991-93	\$296.7	\$695.5	---	\$238.1	\$31.6	\$1,261.9
1993-95	318.0	767.1	---	266.3	34.7	1,386.1
1995-97	338.8	853.4	---	277.2	40.3	1,509.7
1997-99	402.8	1,002.8	---	290.2	45.4	1,741.2
1999-01	439.5	1,107.8	---	311.4	50.5	1,909.2
2001-03	473.6	1,142.0	\$203.9	363.3	49.0	2,231.8

*This program component was part of the state highway rehabilitation component prior to the 2001-03 biennium.